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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,260	02/26/2004	David M. Pepper	B-4128 618652-9	9389

7590 01/24/2006

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EXAMINER

LYONS, MICHAEL A

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/789,260	Applicant(s) PEPPER ET AL.	
	Examiner Michael A. Lyons	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>071304</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

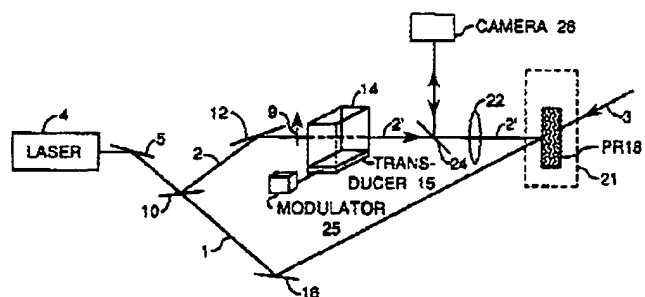
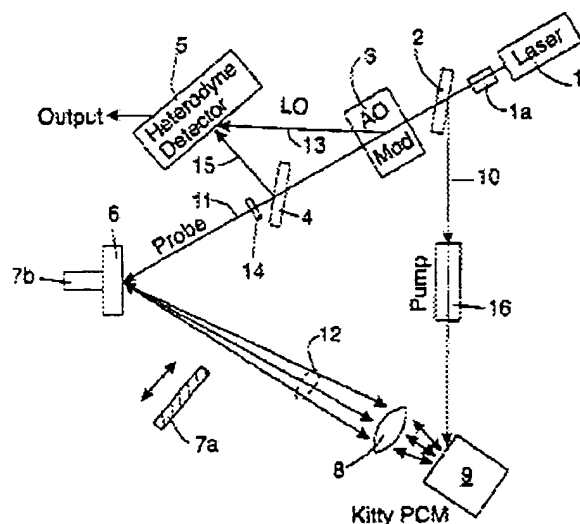
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being obvious over Pepper et al (6,657,732) in view of Khoury et al (5,684,588) and in further view of Ortyn et al (6,532,061).

The applied reference (6,657,732) has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which

Art Unit: 2877

corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).



Regarding claims, 1, 14, and 23-24 Pepper (Fig. 1) discloses an optical system and corresponding method for measuring the motion of objects in a scattering medium comprising a laser probe source 1 for producing a beam to illuminate a scattering object 6, a wavefront-reversal device 9 for collecting light reflected by the object and returning a conjugated beam, and an optical detector 5 for detecting and processing the conjugated beam.

While the object of the Pepper device scatters the probe beam 11 that is incident upon it and reflects off it due to the vibrations of the object, it is not a scattering medium as claimed

where the incident light beam propagates through it to measure the motion of the objects in the medium.

Khoury (Fig. 1), however, discloses a light scattering medium measurement device where light from laser 4 is transmitted through scattering medium 14 so that measurements may be made of the objects within the scattering medium. Furthermore, Ortyn (Figs. 2 and 3) shows that the motion of objects in a scattering medium can be measured both reflectively (Fig. 2) and transmissively (Fig. 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a transmissive scattering medium in the device of Pepper as per Khoury and Ortyn to measure the motion of the objects within the scattering medium, the motivation being that reflecting the light off a scattering medium or transmitting the light through a scattering medium will lead to accurate measurement of the medium; reflecting or transmitting the light on its own does not change the optical properties of the light, only the scattering of the light due to the motion of the medium, and with both the transmissive and reflective objects themselves being what causes the light to scatter, this allows for the same measurements to be made of either a reflecting or transmitting medium with the same device as per Ortyn.

As for claims 2 and 15, the combined device discloses the claimed invention, but fails to disclose the use of an amplifier between the scattering medium and the wavefront reverser. Official Notice is taken, however, as to the well known use of amplifiers in interferometry, and it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an amplifier between the scattering medium and the wavefront reverser, the

Art Unit: 2877

motivation being that an amplifier enhances and cleans up signals, leading to better, more accurate measurements of the scattering medium.

As for claims 3, 5, 16, and 18 the wavefront-reversal device of Pepper is an externally pumped phase conjugated mirror, as the mirror is pumped by light beam 10 sent through amplifier 16.

As for claims 4, 6, 17, and 19, Pepper discloses lens 8.

As for claims 7-8, and 20-21 detector 5 of Pepper is a coherent, heterodyne detector.

As for claims 9 and 22, figure 4b of Pepper shows that the detector can be a homodyne detector.

Regarding claim 10, Pepper (Fig. 1) discloses an optical system comprising a laser probe source 1 for producing a beam to illuminate a scattering object 6, a wavefront-reversal device 9 in the form of a phase-conjugate mirror for collecting light reflected by the object and returning a conjugated beam, and an optical detector 5 for detecting and processing the conjugated beam.

While the object of the Pepper device scatters the probe beam 11 that is incident upon it and reflects off it due to the vibrations of the object, it is not a scattering medium as claimed where the incident light beam propagates through it.

Khoury (Fig. 1), however, discloses a light scattering medium measurement device where light from laser 4 is transmitted through scattering medium 14 so that measurements may be made of the objects within the scattering medium. Furthermore, Ortyn (Figs. 2 and 3) shows that a scattering medium can be measured both reflectively (Fig. 2) and transmissively (Fig. 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a transmissive scattering medium in the device of Pepper as per

Art Unit: 2877

Khoury and Ortyn, the motivation being that reflecting the light off a scattering medium or transmitting the light through a scattering medium will lead to accurate measurement of the medium; reflecting or transmitting the light on its own does not change the optical properties of the light, only the scattering of the light due to the motion of the medium, and with both the transmissive and reflective objects themselves being what causes the light to scatter, this allows for the same measurements to be made of either a reflecting or transmitting medium with the same device as per Ortyn.

As for claim 11, “the present invention (of Pepper) uses a self-pumped “kitty” Phase Conjugate Mirror with gain” (Col. 1, lines 62-64).

As for claim 12, the wavefront-reversal device of Pepper is an externally pumped phase conjugated mirror, as the mirror is pumped by light beam 10 sent through amplifier 16.

As for claim 13, Pepper discloses lens 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 571-272-2420. The examiner can normally be reached on Monday through Friday.

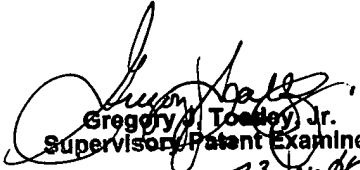
If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Gregory J. Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2877

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAL

January 19, 2006


Gregory J. Toole, Jr.
Supervisor, Patent Examiner
23 JAN 06